

WHAT IS CLAIMED IS:

1. A method of treating vulnerable plaque, comprising:

a) positioning a wingless balloon of a balloon catheter in a portion of a body lumen having a vulnerable plaque; and

b) inflating the wingless balloon, to expand the balloon from a wingless unexpanded diameter to an expanded diameter, to intentionally damage or rupture the vulnerable plaque.

2. The method of claim 1 including determining a diameter of the portion of the body lumen having the vulnerable plaque, so that the balloon expands to a preselected expanded diameter selected to correspond to the diameter of the portion of the body lumen having the vulnerable plaque and into contact with a wall defining the portion of the body lumen having the vulnerable plaque to thereby damage or rupture the vulnerable plaque without damaging the body lumen wall adjacent to the vulnerable plaque.

3. The method of claim 2 wherein the balloon is expanded to a diameter sufficient to compress the vulnerable plaque.

4. The method of claim 1 including delivering an antithrombotic agent within the body lumen.

5. The method of claim 2 wherein the balloon has a highly compliant radial expansion up to a nominal expanded diameter within a first inflation

pressure range, and a low compliant radial expansion within a second higher inflation pressure range.

6. The method of claim 5 wherein the balloon has at least one layer formed of a polymeric material selected from the group consisting of expanded polytetrafluoroethylene, and expanded ultrahigh molecular weight polyolefin, and the balloon is inflated at an inflation pressure within the second higher inflation pressure range.

7. The method of claim 6 wherein the balloon is inflated at an inflation pressure of about 10 atm to about 20 atm.

8. The method of claim 6 wherein the at least one layer of expanded polytetrafluoroethylene, and expanded ultrahigh molecular weight polyolefin is porous with an antithrombotic agent within the pores, and b) includes delivering the antithrombotic agent within the body lumen.

9. The method of claim 5 wherein the balloon expands to an expanded diameter of about 2% to about 15% greater than the nominal diameter within the second, higher inflation pressure range, and b) comprises inflating the balloon at an inflation pressure within the second inflation pressure range.

10. The method of claim 1 wherein b) comprises inflating the wingless balloon using a diameter-limiting inflation device.

19. The method of claim 13 wherein the balloon is formed of a polymeric material selected from the group consisting of polyurethane elastomers, silicone polyurethanes, segmented polyamide block copolymers, segmented polyester block copolymers, styrene butadiene rubber, and radiation crosslinked polyolefinic elastomers.

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